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## REMARKS

Claims 1-26 are pending, with claims 1, 7, 13, 17, 21 and 24 being independent. Claims 1, 7, 13, 16, 17, 21 and 24 have been amended. Claims 2, 3, 8, 9, 15, 18, 19, 22 and 25 have been cancelled without prejudice. No new matter has been added. Reconsideration and allowance of the above-referenced application are respectfully requested.

Claims 1-13, 15-21, 23-24 and 26 stand rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over McEwen et al. (US 6,732,328) in view of Akiyama et al (US 7,080,313) and further in view of Abu-Rgheff et al. ("A Modified Viterbi Decoder based upon Cross Correlation for use in Bandwidth Efficient Systems", Digital Satellite Communications, 1995, Tenth International Conference, 15-19 May 1995, University of Plymouth, U.K.). Claim 14 stands rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over McEwen and Akiyama as applied to claim 13, and further in view of Cideciyan et al. (US 6,377,635). Claims 22 and 25 stand rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over McEwen and Akiyama as applied to claims 21 and 24, and further in view of Fisher et al (US 6,249,398). These contentions are respectfully traversed.

Independent claims 1, 7, 13 and 17 have been amended to include the subject matter of cancelled claims 3, 9, 15 and 19, respectively. In the rejection of claims 3, 9, 15 and 19, the Office states:

> Re claims 3, 9, 15 and 19, McEwen teaches of the partial response channel (#17, Fig.2) having a transfer function ($H(D)$, Col 7, Lines 8 - 12) defined according to a target polynomial, $T(D)=p_0 +p_1D+...+P_MD^M$ (Col 7, Lines 8 - 12) the Viterbi detection operates according to a trellis having $2^M$ states ($2^L - 1$ states, Col 7, lines 47 – 60), and all survivor paths (associated with all the $2^M$ states in the trellis merge in $M$ steps (Col 2, lines 3 – 4).

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*See* 11-23-2007 Office Action at page 7. However, McEwen does not specify how many steps

are needed for all survivor paths to merge as indicated by the Office. McEwen states:

> The Viterbi algorithm is an iterative process of keeping track of the path with
> a smallest accumulated metric leading to each state of a detection trellis (graph).
> The metrics of all of the paths leading into a particular state are calculated and
> compared. Then, the path with the smallest metric is selected as the survivor path.
> In this manner all paths which can not be part of the minimum metric path
> through the trellis are systematically eliminated. The survivor path to each state is
> stored in a path memory. Given that the path memory is made sufficiently long,
> all of the survivor paths will diverge from a single path within the span of the path
> memory. The single path from which all of the current survivor paths diverge is
> the minimum metric path. The input sequence associated with this path appears at
> the output of the Viterbi detector.

*See* McEwen at page col. 1, line 63, to col. 2, line 10. Nothing in this portion of McEwen can be

linked with the other cited portions of McEwen to teach that all the survivor paths merge in M

steps, where M corresponds to the target polynomial, $T(D) = p_0 + p_1 D + \cdots + p_M D^M$. The cited

portions of McEwen do not specify how many steps are needed for all survivor paths to merge.

Similar arguments were presented with respect to claims 3, 9, 15 and 19 in the last Response, and

the Office has failed to address these arguments. Moreover, neither Akiyama nor Abu-Rgheff

cure the noted deficiencies of McEwen.

For at least the above reasons, each of independent claims 1, 7, 13 and 17 should be in

condition for allowance. Dependent claims 4-6, 10-12, 16 and 20 should be allowable based on

the above arguments and the additional recitations they contain. For example, claim 16 recites,

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"wherein the memory comprises a path memory of length M." The cited portion of McEwen

merely states:

> The number of states in a Viterbi detector matched only to the channel is equal to
> $M=2^{L-1}$, where L is the length of the partial response, i.e. the span of non-zero
> terms.

*See* McEwen at col. 3, lines 13-15. The cited portion of McEwen does not specify the length of

the path memory as suggested by the Office. In response, the Office now states, "Examiner

submits that this is taught in the background of McEwan Patent for a conventional Viterbi

algorithm (Col 2, Lines 1-10 and Col 3, Lines 13-24)." *See* 11-23-2007 Office Action at

page 13. However, these portions of McEwan merely state:

> The survivor path to each state is stored in a path memory. Given that the path
> memory is made sufficiently long, all of the survivor paths will diverge from a
> single path within the span of the path memory. The single path from which all of
> the current survivor paths diverge is the minimum metric path. The input
> sequence associated with this path appears at the output of the Viterbi detector.
> [...] The number of states in a Viterbi detector matched only to the channel is
> equal to M=2.sup.L-1, where L is the length of the partial response, i.e. the span
> of non-zero terms. For a (1-D) dicode channel the number of Viterbi states is 2.
> For a (1-D)(1+D).sup.2 EPR4 channel, the number of states is 8. Channels that
> provide better performance at higher densities tend to have even more states.
> When a modulo-7 code is used on a channel with M states, the combined Viterbi
> detector has 7M states. As the number of states in the channel increases, the
> complexity of the combined detector increases seven-fold.

*See* McEwen at col. 2, lines 3-10, and col. 3, lines 13-24. Nothing in these newly cited portions

of McEwan actually state that the path memory is of length M, where M corresponds to the

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target polynomial, $T(D) = p_0 + p_1 D + \cdots + p_M D^M$. Thus, claim 16 should be allowable for at least this additional reason.

With respect to claim 14, Cideciyan fails to cure the noted deficiencies of McEwen. Thus, claim 14 should be allowable at least based on its dependence from claim 13.

Independent claims 21 and 24 have been amended to include the subject matter of cancelled claims 22 and 25, respectively. As noted by the Office in the rejection of claims 22 and 25, Fisher uses an error generator 64 to provide input via a path 67 to timing control circuitry 70, which in turn adjusts the sampling phase of the sampler 46. However, components 64, 67, 70 and 46 are clearly separate from the Viterbi detector 60. *See* Fisher at FIG. 2. Thus, these components cannot be equated with the claimed subject matter: "the Viterbi detection means provides robust tolerance of phase uncertainty" (emphasis added). The Office has failed to address this previously presented argument. Thus, for at least this reason, claims 21 and 24 should now be in condition for allowance.

## CONCLUSION

The foregoing comments made with respect to the positions taken by the Examiner are not to be construed as acquiescence with other positions of the Examiner that have not been explicitly contested. Accordingly, the above arguments for patentability of a claim should not be construed as implying that there are not other valid reasons for patentability of that claim or other claims.

In view of the present response, all of the claims should be in condition for allowance. A formal notice of allowance is respectfully requested.
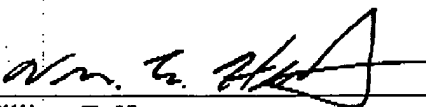
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Please apply any necessary charges or credits, to deposit account 06-1050.

Respectfully submitted,

Date: January 23, 2008

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